Atlantic Richfield Company

4 Centerpointe Drive, 2nd Floor, Suite 20
La Palma, CA 906231066
Office: (657) 5294537
Fax: (657) 5294559
E-Mail: Anthony.Brown@bp.com

Anthony R. Brown
Project Manager, Mining

August 25, 2017

Lynda Deschambault
Remedial Project Manager, Superfund Division
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street, 10th Floor (SFD 7-1)
San Francisco, California 94105

Subject: **Final Baseline Human Health Risk Assessment Work Plan Revision 2 – Task Sampling and Analysis Plan for Bioaccessibility Testing [Draft Final]**
Leviathan Mine Site
Alpine County, California

Dear Ms. Deschambault:

Atlantic Richfield Company (Atlantic Richfield) submits the enclosed Final Baseline Human Health Risk Assessment Revision 2 – Task Sampling and Analysis Plan for Bioaccessibility Testing [Draft Final] (TSAP). This document was prepared in partial fulfillment of the requirements of the Statement of Work attached to the Administrative Order for Remedial Investigation and Feasibility Study, Comprehensive Environmental Response, Compensation, and Liability Act Docket No. 2008-18 issued by the U.S. Environmental Protection Agency (U.S. EPA) on June 23, 2008.

The enclosed draft final version of the TSAP considers floodplain soil data and reference area data that were not available when the prior draft version was published. It also addresses comments provided by the U.S. EPA and the Lahontan Regional Water Quality Control Board (LRWQCB) in letters dated July 20, 2017, and June 29, 2017, respectively. Specific point-by-point responses to U.S. EPA and LRWQCB comments are provided in Table 1 (attached).

The July 20, 2017 letter instructed Atlantic Richfield to respond to the U.S. EPA's comments before implementing field sampling. The letter was unclear whether the U.S. EPA was approving the submission. To complete field work prior to the end of this field season, we will be initiating field work on September 18, 2017. If we do not receive any comments prior to that date, we will assume that we are authorized to proceed as outlined in the TSAP.

If you have any questions or comments, please feel free to contact me at (657) 5294537 or anthony.brown@bp.com.

Sincerely,

Anthony R. Brown
Project Manager, Mining

Attachment: Table 1 – Response to U.S. EPA Comments dated July 20, 2017, and LRWQCB Comments dated June 29, 2017, on Final Baseline Human Health Risk Assessment Work Plan Revision 2 – Task Sampling and Analysis Plan for Bioaccessibility Testing [Draft] Dated April 21, 2017

Enclosed: Final Baseline Human Health Risk Assessment Work Plan Revision 2 – Task Sampling and Analysis Plan for Bioaccessibility Testing [Draft Final]

cc: Gary Riley, U.S. Environmental Protection Agency, Region 9 – via electronic copy
John Hillenbrand, U.S. Environmental Protection Agency, Region 9 – via electronic copy
Douglas Carey, Lahontan Regional Water Quality Control Board – via electronic copy
Scott Ferguson, Lahontan Regional Water Quality Control Board – via electronic copy
Nathan Block, Esq., BP – via electronic copy
Adam Cohen, Esq., Davis Graham & Stubbs, LLP – via electronic copy
Sandy Riese, EnSci, Inc. – via electronic copy
Marc Lombardi, Amec Foster Wheeler – via electronic copy
Grant Ohland, Ohland HydroGeo, LLC – via electronic copy
Dave McCarthy, Copper Environmental Consulting – via electronic copy
Cory Koger, U.S. Army Corps of Engineers – via electronic copy
Greg Reller, Burleson Consulting – via electronic copy
Ken Maas, U.S. Forest Service, Humboldt-Toiyabe National Forest – via electronic copy and hard copy
Susan Jamerson, Washoe Tribe of California and Nevada – via electronic copy
Neil Mortimer, Washoe Tribe of California and Nevada – via electronic copy
Norman Harry, Washoe Tribe of California and Nevada – via electronic copy and hard copy
Cale Pete, Washoe Tribe of California and Nevada – via electronic copy
Fred Kirschner, AESE, Inc. – via electronic copy and hard copy
Ned Black, U.S. Environmental Protection Agency, Region 9 – via electronic copy
Sophia Serda, U.S. Environmental Protection Agency, Region 9 – via electronic copy

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TABLE 1
RESPONSE TO U.S. EPA COMMENTS DATED JULY 20, 2017, AND
LRWQCB COMMENTS DATED JUNE 29, 2017, ON FINAL BASELINE HUMAN HEALTH RISK ASSESSMENT WORK PLAN REVISION 2 –TASK SAMPLING AND ANALYSIS PLAN FOR BIOACCESSIBILITY TESTING [DRAFT] DATED APRIL 21, 2017[1]

Leviathan Mine Site
Alpine County, California

Comment No.	Comment	Atlantic Richfield Response
--	The bioaccessibility information collected from these proposed sieved samples will be considered applicable only to those samples that were previously sieved (the <250-micron portion soil sample) for laboratory analysis. A majority of the samples were not sieved at all, and this data is not applicable to those samples.	The revised TSAP has been updated to address the revised procedures for *in vitro* bioaccessibility assays described in the recently promulgated U.S. EPA Method 1340, Rev. 1 for *In Vitro Bioaccessibility Assay for Lead in Soil.* EPA Method 1340, Rev. 1 requires the segregation of the <150-micron fraction for the bioaccessibility analysis rather than <250-micron fraction that was in the previous version. RI/FS metals analyses were performed on soil samples collected during previous mine waste and River Ranch soil investigations using the <250-micron fraction on 20 percent of the samples in addition to analysis of the total soil sample. In accordance with the procedures in the recently promulgated U.S. EPA Method 1340, Rev. 1, samples collected for bioaccessibility testing will be sieved to segregate the <150-micron fraction prior to analysis. To understand the significance of this smaller size fraction and to be consistent with sampling in the mine waste and River Ranch soil, bioaccessibility testing will also be performed on the <250-micron fraction for these media and corresponding reference area samples to allow for comparisons between bioaccessibility testing results for the two size fractions. As implemented in the Mine Waste TDSR,[2] the sieved results were used to adjust exposure point concentration to a value representative of the sieved soil (<250 microns in size in that TDSR). Data collected under this TSAP will allow for similar adjustment (if necessary) for the <150-micron fraction based on the relationship of the total metals measured for the unsieved samples and the <150-micron samples for each media. Therefore, the bioaccessiblity results will be directly applicable to the calculation of risk using the adjusted exposure point concentration for all five media regardless of whether a sample was sieved.
1	Arsenic Concentrations: Page 5, Section 5.0 first paragraph – Please specify both the numeric range of arsenic concentrations detected in samples from other investigations, as well as the range of arsenic concentrations to be evaluated under this Work Plan. Please explain the rationale to use arsenic as an indicator for other metals related to mine waste.	Table 3 has been added to the revised TSAP to show the range of arsenic concentrations in all samples from the various soil media in samples of shallow soil (0 to 0.5 feet bgs) and the concentrations of arsenic in the sample locations selected for bioaccessibility testing (also 0 to 0.5 feet bgs). Additional data have become available since the TSAP was developed, which has resulted in changes to some sample locations for River Ranch (site-related and reference), mine waste (reference), floodplain soil (site related), and Leviathan Mine Road (site related and reference). Arsenic was used as an indicator chemical for other metals potentially related to mine waste because arsenic concentrations are elevated in the mine waste and because it is one of the two metals that can be assessed quantitatively based on *in vitro* testing. The other metal, lead, does not vary as much in the mine waste as arsenic and was not considered as good an indicator. The laboratory data available for other metals were considered but were not a deciding factor in selecting bioaccessibilty sampling locations because data for these other metals will be used qualitatively.

TABLE 1
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2	Table 3, Field Sampling Plan Summary for Bioaccessibility. Please verify that there is a cut into native materials on each transect. The road reference sample is to be collected from that portion of the transect that constitutes an excavated cut slope into native ground, and the road sample is to be collected from that portion of the transect that constitutes the travel way for vehicular traffic (not including shoulders). There are only nine sample locations for the Leviathan Mine Road, however the work plan states that ten samples from each media will be evaluated, please clarify.	In accordance with the approved Leviathan Mine Road TSAP,[3] samples for FPXRF analysis were collected on each transect as follows: • "At each transect, two sampling locations will be identified. One will be located on the upslope edge of the road, which will attempt to target the materials that may have been cut during road construction. The other will be located downslope of the road in the fill slope. The road edges [in the fill slope] will be targeted for collection to aid in the potential identification of different fill materials below the imported gray road base. The upslope cut samples will be considered reference samples for comparison to the downslope samples that will be considered representative of road fill materials. • "If either the cut or fill material cannot be identified, the sample locations will be placed adjacent to the road, just outside of the imported gray road base that covers the travel lanes." • "If imported gray road base is present at the sample location, the road base will be removed from the surface prior to collection of the sample, and will not be incorporated into the sample." Samples were also collected for laboratory analysis at approximately 35 percent of the FPXRF sample locations; however, the laboratory samples were spatially distributed on a relatively uniform basis and not necessarily paired (cut slope and fill slope) on transects. A subset of the laboratory sample locations will be resampled for bioaccessibility testing. The TSAP has been revised to indicate that there were nine reference sample locations located in the excavated cut slope in native materials along Leviathan Mine Road. In addition, a tenth reference sample location is planned in the cut slope material at transect TR-70. Samples for bioaccessibility testing will be collected from these same ten reference locations.

Note(s)
1. The LRWQCB comments are the basis for Comments 1 and 2 from U.S. EPA; thus, separate response was not prepared to the LRWQCB comments.
2. Atlantic Richfield Company, 2016, Mine Waste Technical Data Summary Report, Leviathan Mine Site, Alpine County, California [Draft]. Prepared by Amec Foster Wheeler Environment & Infrastructure, Inc., April 23.
3. Atlantic Richfield Company, 2016, Revised Off-Property Area Focused Remedial Investigation Work Plan Addendum No. 2 – Leviathan Mine Road Task Sampling and Analysis Plan, Leviathan Mine Site, Alpine County, California [Draft Final]. Prepared by Amec Foster Wheeler Environment & Infrastructure, Inc., August 12.

Abbreviation(s)
< = less than
bgs = below ground surface
EPA = Environmental Protection Agency
FPXRF = field portable x-ray fluorescence
LRWQCB = Lahontan Regional Water Quality Control Board
Rev = Revision
TDSR = Technical Data Summary Report
TSAP = Task Sampling and Analysis Plan
U.S. EPA = U.S. Environmental Protection Agency